Notes for Linux Hands-On

First thing is to remember that Linux is a *multi-user* system

- This means that more than one user can be running programs at the same time.
- One user on keyboard/display, others remotely connect
- Modern (e.g. anything after 2012) can easily handle several users at once

Users

- Master user – “root” can do anything.
  - Dangerous – needs to be restricted
- Each user has their own file space, login/password
  - Some users can also execute programs with root priveleges
  - Not a default
  - “sudo” command – lets a (priveleged) user run a program with root priveleges
- Other “facilities” may be restriced to certain users
  - Several “groups” for particular priveleges
  - Example – Serial ports – user must be part of “dialout” group

The Linux File System

- FS is like a tree, but as in most computer-related work, it's upside-down.
- */home*/user is where user files are
- /etc is where various system-wide config files are kept
- /usr – where most programs are
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File system - continued

- “Fully qualified filename
  - Gives full description of file starting at root
  - */home/drdave/music/beethoven.mp3*
  - Lets you address files not in current directory
- All commands reference current directory unless file reference is “fully qualified”

Linux/Ubuntu Desktop

- Similar to Windows
  - Click on icon to run/open
  - Also “start” button to select programs
  - Task bar (on left – can be moved) shows running plus common programs
- Upper right hand icon for logoff/shutdown plus access to some system actions like printers

Command Line

- Gives direct access to full system power. Like DOS on steroids
- Actuallly running a program – the shell
- Shell allows user to run various system functions directly as well as allowing functionality that does not easily go with icon execution e.g. compilation
- The shell itself can be “programmed” – more advanced users

Some commands

- Commands are actually programs
  - Each “does one thing well” (Unix philosophy)
  - Basic command plus optional “flags” that modify behavior
- Some common commands
  - cd “directory” - changes to “directory”
  - cat “file” - dumps contents of “file” to console
  - more – like cat, but stops after each screenful
  - ls – shows files in current directory
    - ls -l more detailed listing
    - ls “directory” lists files in “directory”
  - rm “file” – delete file

More commands

- gedit – text editor
- gcc – compiler – can actually invoke c, c++, fortran

Ham radio applications

- Many HR related programs available
  - Full FLDIGI and “friends” fully linux “native”
  - WSJTX suite
  - Look online

Build it yourself

- Steps
  - Download “packed” file e.g. fldigi.tgz
  - Unpack – tar -tzvf fldigi.tgz
  - Build it
    - cd fldidi.tgz
    - ./configure
    - make
    - make install
  - Use it

Build it details

- “tgz” is common Linux equivalent to .zip file
- Pack/unpack via “tar” command
  - Lots of options but x – extract, z – compress most common
- “configure” - program to ensure all needed parts are available – builds Makefile
- Make – program to build multi-component program
  - Has list of individual “parts” and how to make them
  - Multiple “targets” -e.g. program, install most common

Miscellaneous

- Multiple IDEs available
  - Some may be “multilingual” e.g. Eclipse
  - Include editor, console, debugging facility, all integrated
- Example – Spyder for Python
- WINE – Windows Emulator
  - Can run many Windows programs